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# Eat for Health: A Nutrition and Cancer Control Supermarket Intervention

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## Synopsis.....

*The growing evidence linking dietary patterns to the incidence and prevention of chronic disease has prompted a number of prominent health and scientific agencies to publish dietary guidelines for the public. Some dietary guidelines address specific diseases, such as cancer or heart disease; others focus on overall health promotion. This situation has created a demand for nutrition education and information programs for the public.*

*Increasingly, supermarkets are seen as potential sites for effective consumer education. Eat for Health is a joint research study by the National Cancer Institute (NCI) and Giant Food Inc., a regional supermarket chain in the Washington-Baltimore area.*

*The study's goal was to test the feasibility of supermarkets as a site for consumer nutrition education. Eat for Health's educational focus was diet and cancer control issues in the context of dietary patterns that promote health. Particular attention was paid to reduction of fat intake and increases in consumption of dietary fiber from grains, vegetables, and fruits. Analysis of program results is currently underway; data should be available in early 1990.*

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**I**N THE PAST dozen years, a number of reports have documented the growing body of evidence linking dietary patterns to the development and prevention of common chronic diseases (1-7). The associations between diet and the development of heart disease, diabetes, hypertension, and obesity have been studied for decades. More recently, attention has been focused on the role of diet in the etiology and prevention of cancer, and it has been estimated that 35 percent of all cancer mortality is related to diet, with a range of 10 to 70 percent (3).

To inform the public about this relationship, several groups have issued dietary guidelines aimed

at reducing cancer incidence. These groups include the National Research Council of the National Academy of Sciences (NAS), the National Cancer Institute (NCI), and the American Cancer Society (ACS) (4,6-9). The dietary guidelines issued by NAS, NCI, and ACS are similar in many respects to dietary recommendations that address other chronic diseases, such as cardiovascular disease (10), as well as those intended to address overall health promotion (11).

Many methods, including mass media communications programs and community interventions (12-16), have been used to answer the growing public demand for credible, consistent, and usable

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information about eating practices that promote overall health and reduce the risk of disease. One such method is educational programs in supermarkets, which have attempted to influence behavior at the point of purchase as well as to educate and inform (17,18). Marketplace interventions have shown that point-of-purchase nutrition education programs can influence consumer knowledge and attitudes, but that changes in purchasing behavior are much more difficult to achieve (18-21).

In June 1985, discussions began between the NCI, one of the National Institutes of Health (NIH), and Giant Food Inc., a regional supermarket chain in the Washington-Baltimore area, to develop a study that would further test the effectiveness of the supermarket as a site for nutrition education. The educational focus of the study was on issues of diet and cancer control set within the context of an overall pattern of promoting health. In developing the study, NCI was also interested in determining what strategies and elements could be successfully replicated nationally in other programs of this type.

This study, called Eat for Health, was launched in Giant Food supermarkets in March 1987 and ended in March 1989. Its design was influenced heavily by the experience of two previous collaborative projects between Giant Food and Federal agencies. The first of these was Foods for Health (17), a joint project with the National Heart, Lung, and Blood Institute (NHLBI), another Institute of NIH. This 1-year program (1978-79) focused on diet and heart health issues and included a biweekly bulletin with information, tips, and recipes; shelf signs; various promotional devices such as posters and window signs in the stores; and radio, television, and newspaper advertising. Giant's Washington-area stores served as the test group and received all program materials. Giant's Baltimore stores served as the control group and received no program materials. Results from telephone surveys conducted during the study indicated an increase in

awareness and knowledge among Washington-area consumers, but analysis of food sales data showed no significant difference in overall trends in food sales between the two groups.

The second program was a 2-year collaborative study from 1981 to 1983 with the Food and Drug Administration (FDA) (20). The goal of this study, called Special Diet Alert, was to assist shoppers in finding food products that would answer particular dietary needs. Products that met specific criteria for low or reduced calories, fat, cholesterol, and sodium were identified by special shelf price labels. Approximately 400 foods were included in the program.

In addition to the shelf labels, a guide was developed that listed brand name products included in the program and their specific nutrient levels. The program's primary strategy was to capitalize on consumers' predispositions toward information at the point of purchase. Results from the study showed that, over the 2-year evaluation period, relative market share of the shelf-labeled products increased 4 to 8 percent more in the Washington stores than in the Baltimore stores. The authors of the study suggest that a reason for Special Diet Alert's success was its innovative information delivery system.

The Eat for Health program drew from both Foods for Health and Special Diet Alert in its use of multiple program elements and brand-specific shelf label information. It differed significantly in other respects, however, and in this paper we describe Eat for Health, the process involved in developing the program, and the collaborative nature of the study.

The overall goal of Eat for Health was to test the feasibility of the supermarket as a site for consumer nutrition education. Specific behavioral objectives were to

- Increase consumers' knowledge about diet and health issues, with particular reference to nutrition and cancer risk reduction;
- Positively influence consumers' attitudes toward the purchase and consumption of healthful foods;
- Influence the food purchasing behaviors of consumers to coincide with diet and cancer control objectives.

The study was organized as a 4-year effort, with 1 year of development and baseline sales data collection, 2 years of intervention, and 1 year of data analysis. The more than 100 Giant supermarkets in the Washington area served as the test

group and received all program materials. The approximately 30 stores in the Baltimore area served as the comparison group and did not receive program elements. The evaluation included three waves of a consumer survey and the tracking of data on food sales. Twenty pairs of stores in the Washington and Baltimore areas, matched by local demographic and store characteristics, were selected for use in evaluating the program. A major element of the Eat for Health study was its collaborative nature, with joint planning, development, and management by NCI and Giant.

### **Program Elements**

Eat for Health used a variety of materials to convey the program's nutrition messages of reducing fat intake and increasing dietary fiber intake. A prime consideration in developing program elements was the clarity of these messages. To increase consumer comprehension, messages were consistent across all program elements and were repeated whenever possible. Bold, easy-to-see graphics were used in all elements, and materials were written at the sixth- to seventh-grade level. Finally, special shelf price labels were used to designate foods that contained 2 or more grams of fiber and were low or reduced in fat, cholesterol, sodium, or calories.

**Shelf price labels.** Experience from other supermarket interventions has shown that many consumers report that they want nutrition information in the grocery store, but they want it in a form that is easy and quick to use (21). The Special Diet Alert study showed that placing nutrient information on the shelf price label to flag products with desirable nutritional characteristics is useful because the information is easily understood and conveniently located (18). In Eat for Health, this shelf price labeling technique was continued and information on dietary fiber was added. The nutrition information was contained in a small green box on the right end of the label. As new products came onto the market, they were evaluated for conformance to the nutrient criteria established for Eat for Health shelf labeling. If the item met the criteria, a label was created for it and the item was incorporated into the program. Ultimately, several thousand items throughout the store carried the special label.

Including dietary fiber on the label presented several problems, however. First, it was necessary to determine the level of fiber per serving that needed to be present in the food for a labeling

claim to be made. Labeling claims for nutrients are based on percentages of the Recommended Dietary Allowance (RDA) present in a serving of the food and must conform to standards developed by the FDA (22,23). As there is no RDA for fiber, a decision was made to use 10 percent of the lower end of NCI's recommended intake of 20 to 30 grams of fiber per day as the basis for an adequate level of fiber in a serving. Using 2 grams per serving as the basis for a labeling claim permitted a reasonable number and variety of fiber-containing foods to be included in the program.

Second, including fiber information complicated the label because the messages for fiber and for fat, cholesterol, sodium, and calories were different. "Fiber" on the label signified a product with more dietary fiber; "fat, cholesterol, sodium, or calories" signified a product with less of those items. To solve this problem, an upward or downward arrow was used along with the appropriate word when the Special Diet Alert shelf label was revised for Eat for Health. Figure 1 shows a typical shelf label.

Finally, dietary fiber data for many products were not available from manufacturers or published sources. This lack of data meant that fiber labeling was less complete than that for fat, cholesterol, sodium, and calories.

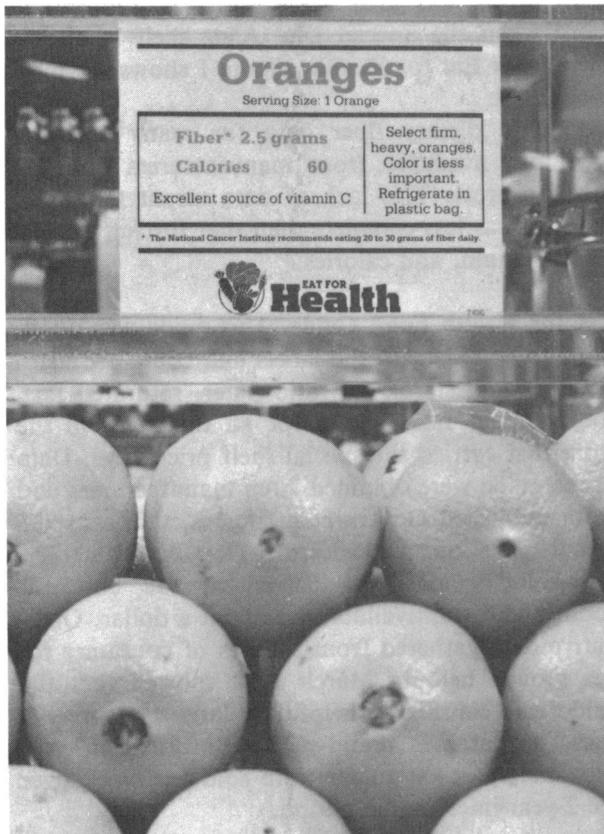
**Eat for Health Food Guide.** This guide was developed to complement the labels and contained calorie, fat, cholesterol, fat ratio (later, saturated fat), sodium, and fiber values for all the items in the store that carried the special shelf price label. Data in the guide were obtained from manufacturers and from published Government sources, primarily the Department of Agriculture's Handbook 8. The four-color guide was located at the checkout counter and was available for about a dollar. Qualitative data gathered from a series of consumer focus groups held in March 1988 showed that the guide was considered helpful in large measure because it contained brand-specific information. Approximately 1,200 guides were sold per week over the 2-year intervention period.

**Eat for Health Bulletin.** This four-page free publication was published monthly and contained factual information on diet, cancer, and nutrition; tips on shopping and food preparation; and recipes. About 150,000 bulletins were distributed every month for 2 years. The content of the bulletins emphasized NCI's guidelines on reduced fat intake and increased fiber from vegetables, fruits, and

Figure 1



Figure 2



whole grains, and used a "Choose More Often/Choose Less Often" approach. In each issue a different theme was used to convey the messages. The emphasis throughout was on the practical and positive aspects of behavior change, and the recipes, menus, and shopping tips were designed to help consumers build these skills. The bulletins were

available at the checkout counters and the Consumer Information Center, located near the store manager's office.

**Produce signs.** To assist consumers in choosing produce items that are particularly good sources of dietary fiber, small signs were developed for 15 vegetables and fruits in the produce section of the store. Information was provided on fiber, vitamins A and C, and calorie levels. Tips on selecting the produce items were also provided. Figure 2 shows a typical produce sign.

**Advertising.** An extensive advertising and publicity campaign was designed to foster and maintain awareness of the Eat for Health program. When the program was launched on March 3, 1987, a joint press conference was held at NCI to announce the program. At the same time, 30- and 60-second television and radio spots featuring O'donna Mathews, Giant's Vice President for Consumer Affairs, were aired in the Washington media market. Giant also highlighted the program with full-page spreads announcing the program and featured it in its regular newspaper food advertisements. This initial publicity was sustained by frequent radio and newspaper advertising and periodic airing of the television spots.

Two special events were held during the course of the program to renew press and consumer interest in Eat for Health. The first was a briefing on the program held for local press in October 1987. Several prominent local health and nutrition experts in the fields of cardiovascular disease, endocrinology, and cancer participated in the briefing to discuss the program in light of their particular areas of expertise. The second event was a recipe contest in March 1988 for Washington-area shoppers sponsored by Giant Food and Hanover Brands, a major vegetable processor. Nearly 1,100 consumer entries were received. Program themes were reflected in the quantitative nutrition criteria developed for use in recipes submitted to the contest.

**Additional program elements.** Several program elements were added during the second year of the intervention. These included signs at the salad bar and frozen yogurt stand that highlighted the positive fat or fiber (or both) contributions of those foods. In addition, in a subset of 20 stores in the test group, special interventions were launched in the meat and poultry department. These special interventions included the development of information brochures and signs about how to select and

prepare low-fat foods, signs in the department that highlighted lean meat cuts, and 60-second videos featuring low-fat preparation techniques for selected lean cuts of meat and poultry. Representative industry groups provided funding for these interventions to Giant.

### **Program Monitoring and Staff Training**

Two final factors considered critical to the success of the program were also implemented. The first factor was a monitoring system in the 20 Washington-area stores included in the evaluation. An NCI representative visited the 20 stores periodically between May 1987 and February 1989 to ensure that produce signs were visible and correctly placed, food guides and bulletins were available at checkout counters, and shelf price labels included the correct nutrition information.

The NCI representative met with the store manager before and after each monitoring session to discuss the visit and issues involved in implementing the program. An average of 80 percent compliance with these criteria for all elements combined was the goal for the monitoring project. Not surprisingly, the shelf price label—the element with the greatest stability—had the highest compliance rate, well over 80 percent. Unlike the other elements, the shelf labels did not change in location, and space was guaranteed for them. These issues were factors in the somewhat lower compliance rates for other elements according to “In-Store Monitoring of a Point-of-Purchase Supermarket Nutrition Intervention,” an unpublished manuscript by Joanne Odenkirchen, Public Health Analyst, Health Promotion Sciences Branch, NCI, and coworkers.

The second factor was training for the Giant staff in the test stores on the purpose of Eat for Health and its elements. The training included the development of a videotape, which was used in an orientation session with store managers. Each store was then provided with a copy of the tape, and managers were responsible for orienting their store staffs. Additional orientation with the store managers, meat managers, and first cutters was held for the interventions in the meat and poultry department. These managers then worked with their staffs to implement the interventions. In both instances, the use of the stores’ usual routes of communication between management and staff enhanced the probability that the program would be implemented and maintained as planned.

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### **NCI and Giant Food Responsibilities**

Several mechanisms were instituted at the outset of the study to ensure the program’s joint development and collaboration between NCI and Giant. The first was an NCI-Giant Food Memorandum of Understanding that outlined the project, detailed the roles and responsibilities of the two organizations, and outlined mutual understanding about program content, data collection, and distribution of program materials after completion of the study.

The second mechanism was the establishment of a working group composed of NCI and Giant staff, a technical consultant, and a writer-editor. The group worked closely together during the project to develop and refine the program materials, evaluation methods, and other aspects of the project.

Within the collaboration, each organization had specific responsibilities with respect to the development of Eat for Health. NCI’s responsibilities included

- organizing the opening press conference;
- planning and implementing the evaluation and program monitoring, analyzing data, and preparing reports;
- providing a writer-editor;
- disseminating research reports;
- disseminating camera-ready program materials, including bulletins and store signs, after the completion of the project; and
- coordinating media relations in cooperation with Giant Food.

Giant Food was responsible for

- providing computerized sales volume data to NCI for selected items;
- coordinating the program in the stores;
- assisting in development of written materials and developing and testing recipes;
- designing, producing, and distributing program materials;

- developing the orientation programs for Giant staff;
- providing camera-ready program materials to NCI after completion of the project;
- developing advertising messages and advertising the program; and
- coordinating media relations in cooperation with NCI.

### Advisory Groups

Program materials went through a lengthy process of development and review to ensure they were accurate, in accordance with NCI policy and dietary guidelines, and usable by consumers. To assist in this process, three advisory panels reviewed and commented on program content, materials, and evaluation: an internal NCI review group established for this project and composed of program staff of the Division of Cancer Prevention and Control and the Office of Cancer Communications; a long-standing Consumer Advisory Board established by Giant Food to advise them on a range of matters, including Eat for Health; and an External Advisory Group established by Giant specifically to advise on the development of this project. The External Advisory Group included representatives of Federal Government agencies, academia, the food industry, and consumer groups.

### Evaluation

The primary objective of the Eat for Health program was to test that lasting changes in food purchasing behavior consistent with dietary guidelines for overall health promotion could occur as a result of a point-of-purchase information and education program. Although a reduction in fat intake and an increase in vegetable, fruit, and fiber intake were at the core of Eat for Health's recommendations, the principal goal of the Eat for Health evaluation was the measurement of changes in purchases of fiber-rich foods including whole grains, dry beans and peas, and other vegetables and fruits. Other important objectives of the evaluation included

- assessment of increased awareness and use of the program by Giant shoppers,
- measurement of changes in consumer knowledge about fat and fiber,
- measurement of changes in food preparation patterns, and
- assessment of the feasibility of a point-of-

purchase approach for cancer-related dietary messages.

The design for the evaluation rested on two components: an analysis of computerized food purchase data and a series of three consumer surveys. The sales data were tracked and the consumer surveys taken in 20 matched pairs of stores in the Washington area and in Baltimore. The stores were carefully selected using census and store volume data. Geographic catchment areas at the census tract level surrounding each store were defined by senior-level Giant staff. Data from the 1980 decennial census were used along with store-specific data in a clustering algorithm to group similar stores. Matching variables included income (adjusted for local area differences in level), proportion black, proportion of homeowners, store volume, and whether the store had a pharmacy. Only this last item required an exact match. Other available demographic variables, such as age distribution and occupation, were used during the final selection process to make the best matches within groups. The schemata of the evaluation design follows:

Washington, DC:  $G1a O_1 X_1 O_2 X_1 O_3$   
 Washington, DC:  $G1b O_1 X_1 O_2 X_1 + X_2 O_3$   
 Baltimore, MD:  $G_2 O_1 - O_2 - O_3$

where:

- $G1a$  = DC stores that receive only the standard intervention.
- $G1b$  = DC stores that receive the standard intervention and the added year two intervention.
- $G_2$  = Baltimore stores.
- $X_1$  = the standard intervention.
- $X_2$  = the year two intervention.
- $O_1$  = baseline observation or measurement.
- $O_2$  = observation or measurement after 1 year of the intervention.
- $O_3$  = observation or measurement after 2 years of the intervention.
- = no intervention.

The first major component of the evaluation was the analysis of computerized food purchase data on selected aggregated food groups. The data were generated through the use of Giant's computerized checkout system, and a year of baseline data was collected before the program launch.

Of prime interest for most groups was determining the proportion of products sold within each group that was high in fiber relative to the other

products in the group. An examination of changes over time will give an indication of product shifting behavior, such as the substitution of whole grain breads for white flour breads. Additional analysis will focus on the change over time in the consumption of produce, both as a total category and in terms of specific high-fiber produce items.

In addition, the fats and oils product category was monitored for overall changes in types purchased. Because a considerable fraction of the fiber sold in products is derived from fruits and vegetables, fluctuations in sales because of price and seasonality were key variables controlled for in the analysis. A cross-section time series econometric model was developed to evaluate the impact of the Eat for Health program on food purchases. The model is particularly well suited to a situation where longitudinal sales data, cross-sectional data on the stores, and the sampling design are available.

The second major component of the evaluation was a consumer survey. The first wave of the survey was held in February and March 1987, the second in February 1988, and the third in February 1989. These surveys, conducted in the 40 test and control stores, have provided quantitative measures of knowledge, attitudes, and behavior related to diet and cancer. They have also assessed the effectiveness of a point-of-purchase strategy in altering knowledge, attitudes, and behavior. The data collection procedure involved three elements: an in-store intercept, a take-home questionnaire, and a followup telephone survey. Thirty-one people were intercepted in each of the 40 stores, with a goal of 25 successful intercepts per store, for a total of 1,000 consumers per wave.

The take-home, self-administered questionnaire was given to willing respondents intercepted in the stores. The respondents were asked to complete the survey within 3 days and told that a short followup telephone interview would occur during the following week. The followup telephone interview was conducted to clarify any unclear answers on the questionnaire and to collect further information on Eat for Health and diet and cancer knowledge.

Response rates were generally quite good for this type of survey. In the first survey wave, final complete responses were 70 percent of those screened eligible shoppers. The second survey had a 76 percent completion rate, and the third had a 64 percent completion rate. Sales and survey data are currently being analyzed and results should be available by summer 1990. Data tapes will be available by fall 1990.

*'It is clear that consumers are interested in ways of improving their health, but it is also increasingly clear that the information must be packaged in ways that fit in with busy schedules, competing interests, and a reluctance to make drastic lifestyle changes.'*

In addition to the collection and analysis of sales data and the consumer surveys, two sets of focus groups were conducted, which included seven to nine consumers of various income levels and occupations, selected on the basis of demographic and shopping characteristics using market research procedures. In February 1986, a series of five groups was held to ascertain knowledge on nutrition issues, assess attitudes toward a nutrition education project of this type, and to receive feedback on proposed program elements and graphic designs. In March 1988, a second series of four groups was held to gauge overall consumer response to the program to date and to receive feedback on proposed elements and approaches for the meat intervention held during the program's second year (Light, L., et al., "Developing a Supermarket Nutrition Intervention: the Eat for Health Focus Groups." Unpublished manuscript.)

## **Conclusion**

Eat for Health is part of a continuing effort to find effective and appealing methods for educating consumers about the vital role of nutrition in health promotion and disease prevention. It is clear that consumers are interested in ways of improving their health, but it is also increasingly clear that the information must be packaged in ways that fit in with busy schedules, competing interests, and a reluctance to make drastic lifestyle changes.

This supermarket nutrition intervention was built on previously successful collaborative experiences between Federal agencies and supermarkets and on the experience of other researchers who have conducted point-of-purchase studies. However, it took a significant step beyond previous projects in a number of respects, including the scope of the project, its length, its extensive advertising, and the scale and depth of the evaluation. In addition, the

reproducibility of the program was an important factor incorporated into the design of Eat for Health. NCI is currently exploring the feasibility of a multichain supermarket intervention study based on the elements and principles derived from Eat for Health.

It is hoped that the findings from this study, which will be available by summer 1990, and the actual program components, which will be available by spring 1990, will assist practitioners in the field to design and implement similar programs in supermarkets in other regions of the country.

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